



COMMON SIMULATION FRAMEWORK (CSF)



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The SS&DD has developed a Common Simulation Framework (CSF) in support of the CCAWS Project Office TOW Fire and Forget (F&F) program. The CSF will be used to support the Simulation Based Acquisition (SBA) requirements of this program by providing a common architecture to be used for systems design and analysis throughout all phases of the program.

The CSF is an object oriented simulation framework written entirely in C++. The CSF architecture is based upon a "client/server" model, which allows the user to assemble component models into simulations via a user-friendly environment. The framework server software provides the services for creating, editing, and executing a simulation. The framework client software consists of a Graphical User Interface (GUI), which supports the visual assembly of component models, provides for the capability to set and store object properties and relationships, and allows for the execution of toolkit applications. When applied to simulation modeling, the client/server approach separates the server software from the client software in order to insulate changes in the GUI that are often platform dependent. To ensure that models developed within the CSF are portable, all models are implemented using server-side frameworks based on the Standard C++ library. The CSF has been designed to support the integration of legacy software modules written in languages such as C, FORTRAN and Ada. Current computer operating systems supported include SGI IRIX 6.5 and PC based LINUX.

The CSF provided as part of the TOW F&F Request for Proposal (RFP) consisted of the core framework software set, notional missile subsystem models, example toolkit software and documentation accessible via a standard web browser. The requirements set forth in the RFP state: "...the offeror shall address how the CSF basic architecture will be modified to simulate both F&F and Alternate Mode Guidance and how the CSF will be populated with legacy and newly developed models to characterize system performance against the specified tactical, test, training and performance requirements".

Upon TOW F&F contract award, a Simulation Integrated Product Team (SIPT) will be formed to coordinate the development of the CSF simulation tools required for systems design and analysis. The early stages of simulation development will involve the integration of the prime contractor's missile six degree-of-freedom (6-DOF) and Automatic Target-tracker models (ATS) into the CSF. Once these simulations are converted, integration of tactical software modules will occur to form the basis of an Integrated Flight Simulation (IFS). This "object oriented" IFS will be designed to create a representation of the system's hardware, tactical software components and virtual IR environment. A realtime version of the CSF 6-DOF will be integrated into the HWIL simulation and Virtual Prototype Simulator (VPS) facilities. The inherent commonality between the IFS, HWIL and VPS simulations will thus greatly reduce the complexity of the overall verification and validation (V&V) effort.